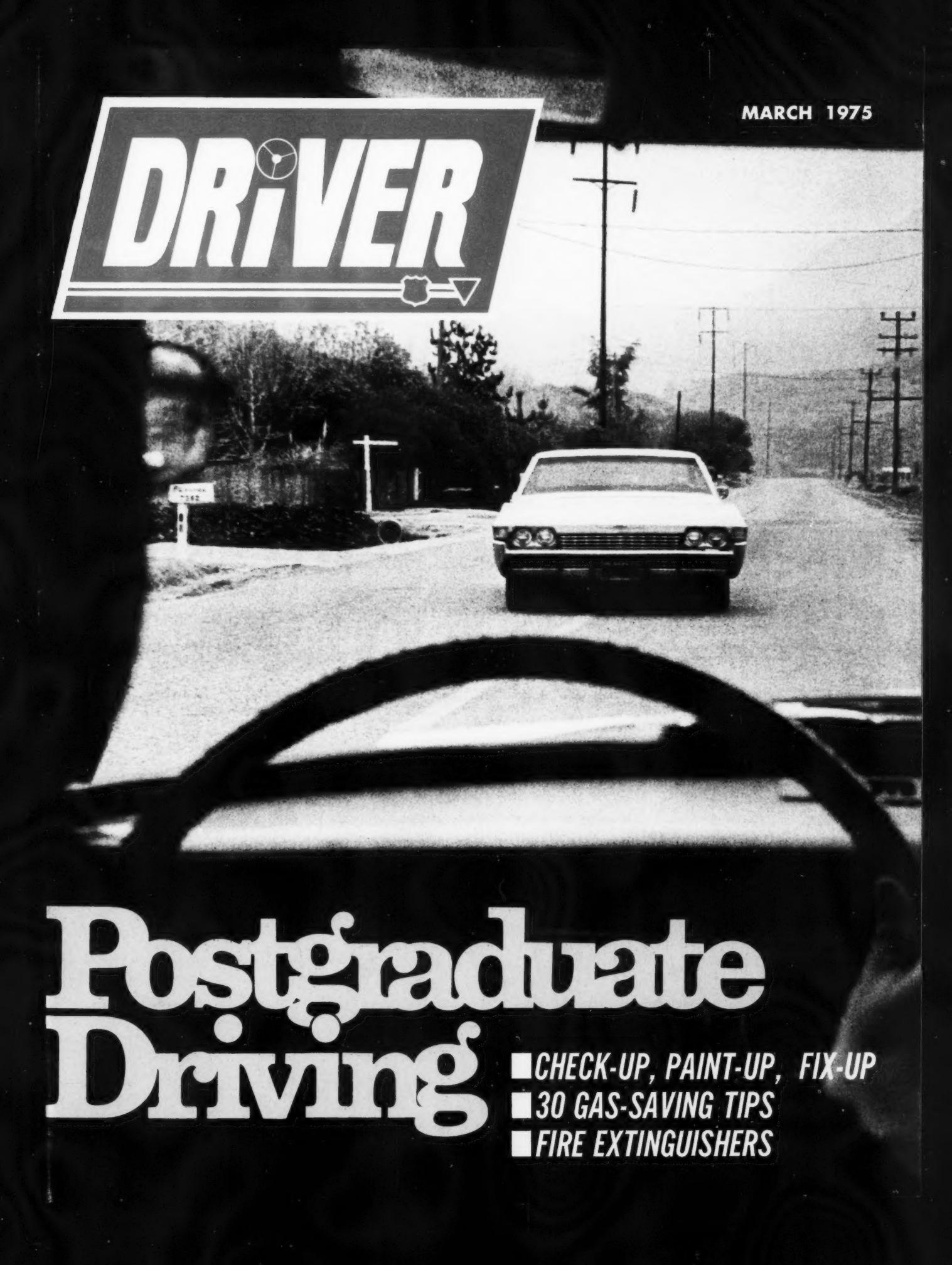

DRiVER

MARCH 1975

Postgraduate Driving

- CHECK-UP, PAINT-UP, FIX-UP
- 30 GAS-SAVING TIPS
- FIRE EXTINGUISHERS

DRiVER

POST

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by ROBERT S. STROTHER

GRADUATE Driving

New courses are designed to remind the motorist that good driving is a skill, not an accident

Mrs. Brenda Elliott, a secretary in Milford, Michigan, was driving home at the tag end of a windy rain squall last summer when she crested a hill and found a fallen tree lying across her path. There was no time to stop.

"If that had hapened two months earlier I'd have jammed on the brakes, locked the wheels, and skidded into a crash," Mrs. Elliott said. "But I was lucky. Some friends in the office had persuaded me to take the General Motors advanced driver education course not long before. I was scared when this tree loomed up all of a sudden, but I knew what to do. I could almost hear my instructor saying, 'Hang in there and steer your way out of trouble.' That's exactly what I did and —who knows?—it may have saved my life!"

Mrs. Elliott is one of thousands who has learned the value of a new movement called "postgraduate" driver education. It comes in several varieties, ranging from simple refresher courses in the basics to strenuous training to deal with grim crises on the road.

Recent improvements in the safety of both vehicles and highways have reduced the rate of highway deaths, and experts say further big reductions depend largely on improving the skills of drivers. For example, most of the 17 million U.S. motor accidents in 1972 were caused by poor driving, with alcohol a factor in more than half of them.

The human factors most frequently causing accidents are improper "lookout," improper evasive action, inattention, and excessive speed. Every driver should check up on his performance. He may not be as good as he thinks.

Aspiring race or rally drivers can learn their special cornering, clutching, and shifting techniques from experts. But the rest of us haven't had anywhere to go for help. Now, however, that situation may be beginning to change both here and abroad.

continued

The key lesson in emergency driving is to avoid panic braking and steer out of trouble when you can. Never slam on the brakes hard.

DRIVER

THE TRAFFIC SAFETY MAGAZINE FOR THE MILITARY DRIVER

MARCH 1975

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THE EDITOR SPEAKS

DOUBLE CLUTCH

MODIFY WITH CARE

A peculiar report from Spain arrived in the office this week and set us to thinking about automobile modifications and how carefully and seriously they must be approached, even when they seem simple.

The report involves a Spanish regulation that rear turn signals be amber instead of red. The modification is relatively simple so the work is often done by the owner.

When the owner of a 1972 Ford Galaxy with cruise control made such a modification, however, complications developed. Cruise control is the device that automatically maintains a fixed speed when selected. It is disconnected by either using an "on-off" switch or by depressing the brake pedal.

Shortly after he had made the change to amber signals, the Ford owner was driving with the cruise control on. A truck caused him to slow down. When he hit the brake, the cruise control did not disconnect. Because the situation didn't require a panic stop, he was able to disconnect the control with the switch.

Examination of the car afterward showed that the modification for the turn signals had altered the cruise control circuitry, circumventing the brake-operated disconnect.

The owner was lucky to discover this fact under circumstances he was able to handle. Today's automobiles are complicated, sophisticated machines. Whenever you make a modification, check the manual, put your head into the job, and take nothing for granted.

NEXT MONTH

One Too Many For the Road

About half the licensed drivers in the U.S. received basic training in high school driving courses. In most places such instruction consists of 30 hours in class, six hours behind the wheel, and can only touch upon the rudiments.

The most promising postgraduate driving programs to date in the United States have grown out of the special training that auto companies give their test drivers. Ford, for example, has found that it is possible to upgrade the performance level of an experienced driver in a short period of time.

General Motors went deeply into research to identify the causes of most accidents and to develop techniques to deal with the situations that cause them. The Advanced Driver Education course they developed was first demonstrated to traffic safety officials of many states and several foreign countries in 1969 at GM's proving ground in Milford. It so obviously filled an important gap in driver training that outsiders were soon clamoring to be allowed to take it. The company therefore set up a traveling instructor training workshop under Richard A. "Doc" Whitworth, noted traffic safety education specialist, to organize training courses in the growing number of university safety centers where high school driving instructors are trained. So far 20 centers have adopted the GM course, built the necessary driving range, and are now teaching hundreds of driving instructors how to cope with emergencies. Eight other centers are waiting in line.

Last fall at the opening of Appalachian State University's new safety center in Boone, North Carolina, I took the course and discovered that I still had a lot to learn about what to do in emergency traffic situations.

In one drill, for example, I was driving at 30 miles an hour along a simulated two-lane road when I allowed my right wheels to drop off the pavement and was suddenly in trouble. The gravel on the shoulder had been washed away and the tires were scrubbing against the edge of the slab. My cautious efforts to climb that four-inch barrier and get back where I belonged were having no effect, and an obstacle on the shoulder ahead was growing rapidly closer.

I wrenched the wheel hard left and got more action than I wanted. The car popped back on the roadway but then bounded on into the opposite traffic lane. When I slammed on the brakes it spun completely around and came to a screeching halt in the wrong lane, facing the way we had come. The entire hair-raising sequence took place with something close to the speed of light.

If those gyrations had occurred in traffic—as they do with daydreamers somewhere every day—they could have produced anything from a bent fender to a ghastly multiple pileup. In my case it was a planned maneuver with Doc Whitworth in person as my instructor.

"So that's how not to make an emergency off-road recovery," Doc said with a grin." Let's go back and run through it again."

Off-road recovery is one of six emergency maneuvers taught in the advanced course. The teachers are Doc's "road show" team of four General Motors experts, and the students that day were driver training specialists from North Carolina colleges, high schools, and the state police. After two-and-a-half days of chalk talks and film presentations interspersed with a total of seven-and-a-half closely graded hours at the wheel, they would be qualified to pass their new skills along to their pupils.

The four training cars in action on the big driving range seemed to be everywhere, weaving, sliding, and skid-

continued

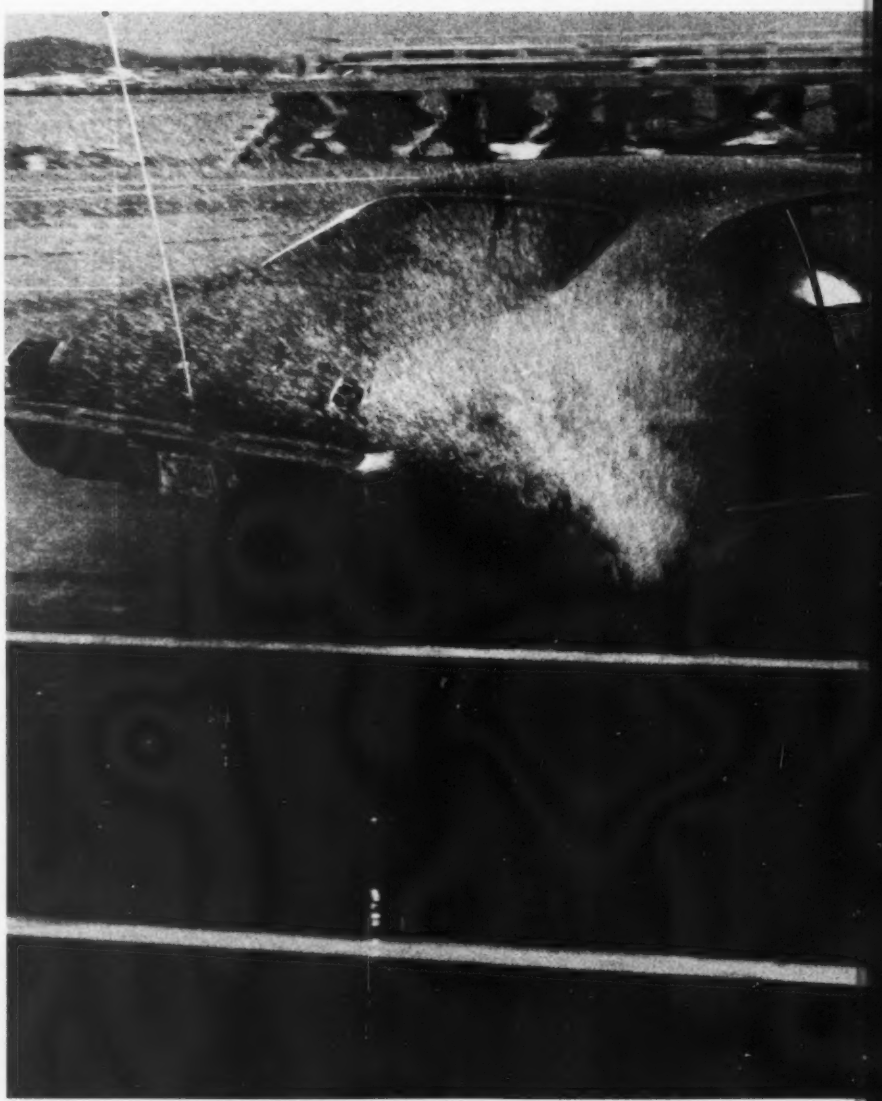
Hands firmly in the nine and three o'clock positions give best control of vehicle.

Even the best of tires can't squeeze water away fast enough for you to drive much above 35 mph in heavy rain. Hydroplaning is a real danger and worn or underinflated tires make it even worse.

ding with spectacular sound effects around rubber pylon cones like those police use to divert traffic. College students, attracted by the banshee howl of tires, clustered outside the fence ready to sound a Bronx cheer when an inept trainee sent a bunch of cones flying, as we all did often. The cars' suspension systems got a hard workout but proved the instructor's point: it is next to impossible to turn a modern car over on an unobstructed surface.

Learning to control a skid is the hairiest exercise in the program. The four training cars are standard models in most ways but the skid car has a sneaky little button that lets the instructor lock the rear wheels suddenly and catch the trainee unaware. As I was crossing the wet skid pad at 20 miles per hour, the rear of the car abruptly skidded left. I countersteered left as instructed and was much relieved to feel the car straighten up nicely. But it kept on skidding right. A countersteer in that direction brought the rear end back again but it kept on going left as before. It took me three or four embarrassing swoops before I tamed the beast.

Doc is a large and patient man who has seen nearly every driving mistake known to man. He sat calmly smoking his pipe through it all and then spoke soothingly. "A great ego deflater, that



For training purposes, the instructor pushes a little button and locks the rear wheels suddenly. Can you correct the skid?

one," he said, and added an epigram: "But then, you can't learn anything until you know you need to learn it. What this teaches is not to relax after you've corrected the first skid. You've got to be ready to correct the counterslide if you don't catch it all the first time."

Later trials went better but left me in no doubt that the best way to deal with slick roads is to stay home in bed.

Although blowouts are increasingly rare (the Indiana study of a thousand accidents did not turn up one) the third exercise drills the trainee in what to do just in case. That training car has a big valve that allows the tire to blow out through the rim when the instructor pushes another control button. By releasing this button he reinflates the tire with air from a tank in the trunk.

"Just stay in the marked lane and go easy on the brakes," he said. "If you slam them on we'll buy the farm." He waved in the general direction of all the land outside the fence. "Okay, put her up to 30."

As we swept around a rising curve on the edge of the range there was a sharp hiss and thump and the car tried to dive off the road to the right. Since I was ready with hands firmly in the approved nine and three o'clock positions I had no trouble keeping straight and coming to an easy halt without knocking down any cones. I got two on the first rear wheel airout at 30 miles per hour but emerged from the exercise without further ignominy.

Proper hand position, care in avoiding brake lock ("you can't steer a locked wheel") and alertness are stressed in every exercise. The basic assumption is that the other fellow just reeled out of a cocktail lounge, and according to the National Safety Council that is just what he has done in about one accident in 50.

There are many situations in which it is smarter to dodge than to brake. In learning evasive action the trainee dashes down a lane at 35 miles per hour. Sixty feet from the cone barrier his instructor barks "left" or "right" and he must swerve as ordered without knocking down any cones. Exercise five, controlled braking, is similar but requires a fast, smooth stop besides.

The last of the six exercises requires weaving in and out of a single line of cones at 40 miles per hour. There's no way to do it unless your hands are set properly on the wheel and you get rhythms in "steering inputs." The instructor won't let you quit until you are reasonably competent, and even then he has a final instructive ordeal. He lets some air out of a couple of tires and has you run the route again. Unequal pressures make the car wander obstinately all over the lot and that is the unsuspected cause of many accidents. The advice is to spend $1.19 for a tire gauge and check pressures once a week for yourself.

All postgraduate schools try to remedy the bad habits that creep into almost everybody's driving: riding the brake, failure to pass decisively, cutting curves too close, tailgating, failure to signal lane changes, failure to make constant use of rearview mirrors and above all, failure to anticipate and take defensive action when trouble starts brewing in the traffic situation.

Plain ignorance often plays a part because motorists who passed their tests years ago may not know how to enter or leave a freeway, for example, or how to avoid trouble at intersections. The newest, safest driving procedures are likely to be all "Greek" to them.

"Even when some of them boast they've never had an accident, I'm tempted to ask them how many they have caused," Doc Witworth says. "That is a big factor often ignored in analyses of traffic accidents."

The fact that advanced driver training reduces both the number of accidents and the severity of those that occur is no longer in dispute. But since training for emergency handling requires close one-to-one coaching by experts in vehicles with some special equipment, it is expensive. The question arose early in the program: is it worth the money?

The first of many convincing answers was not long in appearing. In October 1969 the Sheriff's Department of Oakland County, Michigan, asked GM to train some of its patrolmen for emergencies. To make it scientific 30 officers were chosen and 30 others were kept out for comparison. Close records were kept and two years later the results were published.

The trained group had been in five accidents with no injuries and no time or wages lost. Cost of damage to their vehicles was $1446.50. The untrained group had 10 accidents, 87 days of work and $3500 in wages lost, and $11,347 in vehicle damage. And that figure did not include the cost of three cars totally demolished. In short, the costs of the untrained group were almost 20 times those of the trained group.

I asked Jerry Girard, safety officer for the Sheriff's department and one of the trained group, what had happened since the 1971 report was compiled. "We haven't had any accidents at all in the trained group since then," he said, "and one of our group almost certainly saved the lives of himself and his family by using his new knowledge to dodge a crash while on a vacation trip. The untrained group, meanwhile, has totaled a few more cars. So we are convinced. We are training all our men now, and as far as I'm concerned I'd like to see

continued

Car coming at you head-on? Honk, brake, swerve. Remember, controlled braking. And swerve to the right. Better the ditch than a head-on collision.

Although blowouts are rare these days, most courses drill the student in corrective action—just in case. The instructor can create a blowout at will by pushing a button. The student learns to go easy on the brakes and steer carefully.

emergency handling know-how taught to every motorist before he gets a license."

Obviously no such requirement is likely in the near future because, if for no other reason, there are no facilities for it. The driving ranges at the nearly 40 existing university centers are fully occupied in teaching educators and police, and few if any commercial schools are equipped to offer this kind of training. The question, then, is what can be done for countless drivers who feel the need and would welcome the chance, as I did, to develop skills that could save their lives.

Several traffic safety people with whom I talked agreed that the best bet would be through community action where enthusiasm and ingenuity can make up to a large extent for the great costs that would be inevitable in a massive government-sponsored effort. A service club or safety group, perhaps in cooperation with an insurance company or a local motor vehicle fleet operator, could make an abbreviated version of the emergency handling course available to everybody at a cost almost certainly far below the costs of the hospital and repair bills it would save.

The essentials are a driving range (practice on highways is forbidden) and a certified graduate of an advanced course for the instructor. Neither requirement should present any great difficulty. The name of a graduate living in your area might be obtained from the center nearest you, and a driving range can be built on any reasonably flat, unobstructed plot no smaller than 450 by 250 feet. Stadium or supermarket parking lots can be adapted for use after hours, or an abandoned airstrip could be converted with some work and a small investment in asphalt. To make organization easier General Motors will supply driving range specifications and lend a 20-minute, 16mm sound movie to groups taking up the challenge.

If the full emergency course seems too ambitious a more modest refresher course would be very worthwhile.

Meanwhile, can the average motorist improve his performance just by reading an article like this? "Of course he can," Doc Whitworth says. "He will have in the back of his head a better idea of what he should and should not do in a crisis. If he memorizes a few emergency rules he can increase his odds."

The *key lesson* in emergency driving, I learned, is to avoid panic braking and steer out of trouble when you can. Never slam on the brakes hard. This can make the wheels lock, and a car with wheels locked is out of control. Based on the course I took and advice from traffic experts, here are a few rules worth remembering for common driving emergencies:

If an obstacle suddenly appears ahead: Suppose you come around a curve or over a hill and there's something in the road directly ahead of you and no time to stop without hitting it. Don't just brake and skid into a crash. Instead take your foot off the gas and glance quickly ahead and in your mirror to check other traffic. Then swerve around the obstacle if there's no opposing traffic. If you're on a two-lane road with cars coming, swerve out onto the shoulder. Don't brake, steer.

If you go off the pavement: If you are forced or have slipped off onto a soft shoulder and the pavement's edge is a few inches high, slow down and return to the pavement if you can. If, however, there is something ahead, such as a mailbox, first slow down, straddle the edge of the pavement, and then steer sharply left back onto the road. But remember to return the steering wheel to the straight-ahead position the instant the right front wheel hits the edge of the pavement so you don't cross the lane.

If you start to skid: Most people know enough to turn the wheel into the skid and let up on the gas without touching the brakes. But as steering brings the car out of the skid be ready to steer in the opposite direction if a counterskid occurs, as it often does.

If you have a blowout: Especially if you have been traveling fast, grip the steering wheel hard. Hold it firmly in the nine and three o'clock position to keep control of the car and steer to maintain your lane position. Allow the car to slow down before you touch the brake and then use it very gently. If traffic permits, steer off to the side of the road once you have almost stopped.

If you run into hard rain: In a really bad downpour the risk is hydroplaning and the prevention is to slow down before you lose control. If you've been traveling at freeway speeds, cut to 35 miles per hour or less. At higher speeds your tires can't squeeze the water away fast enough and, especially if underinflated or worn, they may not be in contact with the pavement at all. You may be hydroplaning in other words, and you might not realize you have no traction until you jam on the brakes and go skating off out of control.

If your engine conks out coasting down a hill: Your power brakes and steering no longer have power assistance. So pull the emergency brake full on, then push the brake pedal all the way to the floor and steer hard. You still have brakes and steering but it takes a lot more strength to use them.

If a car comes at you head-on: If a car in an opposing lane cuts into your lane in front of you, honk, brake, and swerve. Blow your horn because he might be dozing. Apply your brakes in a controlled manner and swerve to the right. Go off the road if necessary. Better in a ditch than into a head-on collision.

"Above all," Doc Whitworth says, "don't panic in an accident and never give up! In most situations you can steer yourself out of trouble even after the accident sequence begins."

30 WAYS

Passenger automobiles consume about 14% of all the energy and about 31% of all the petroleum used in the United States.

In the 50 states, there are an estimated 100 million registered automobiles. The average car travels approximately 10,000 miles per year and consumes well over 700 gallons of gasoline. The average fuel economy is less than 13.7 miles per gallon.

In this article are tips on how you can reduce the fuel consumption of your own car. (Owners of the almost 20 million small pickup trucks in the country also can save fuel and money by following these tips.)

If the fuel consumption of the average car were reduced just 15% through better planning of car use, better driving practices, and better maintenance, the nation's consumption of petroleum would fall by over 28 million gallons per day.

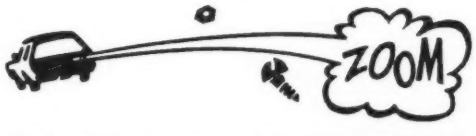
This potential saving in daily fuel consumption is significant from several points of view. It would help stretch America's current fuel supplies further. It would save money and cut pollution. And it would bring considerably closer America's goal of energy self-sufficiency—Project Independence.

IMPROVE YOUR DRIVING SKILLS

The most important single element in determining fuel economy of a particular car is the driving technique of the individual behind the wheel. One authority declares that a careful driver should be able to get at least 30% better mileage than an average driver, and 50% better mileage than a poor one. Here's our advice:

1. **Start slowly.** Accelerate gently except when entering high-speed traffic lanes or when passing. Hot rod driving and jerky acceleration can increase fuel consumption by 2 miles per gallon in city traffic.

2. **Avoid unnecessary braking. And try to anticipate the traffic ahead.** When the traffic light far ahead turns red, take your foot off the accelerator immediately. The light may turn green again by the time you reach the intersection. If not, there's still a fuel saving. In coasting, the car's kinetic energy maintains propulsion rather than burning of additional fuel. There is then less energy to be dissipated in braking. Don't tailgate. This necessitates additional braking too.



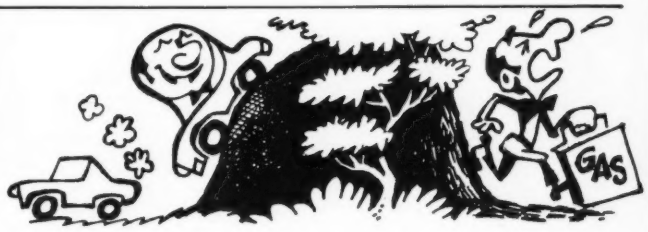
3. **Drive at moderate speeds.** As your speed increases, so does your car's wind resistance — a big factor in gasoline mileage. Most automobiles get about 28 percent more miles per gallon on the highway at 50 miles per hour than at 70 and about 21 percent more at 55 than at 70.

TO MAKE GAS GO FURTHER

4. **Drive at steady speeds.** Hold a steady foot on the accelerator as long as traffic conditions permit. On the highway, "see-sawing" or repeatedly varying the speed by 5 miles per hour can reduce gas mileage by as much as 1.3 miles per gallon.

7. **Avoid excessive idling.** The average American car consumes a cup of gasoline every 6 minutes when idling. When you stop the car, don't idle the engine for more than a minute. If you are waiting for someone, turn off the engine. It takes less gasoline to restart the car than it does to idle it.

5. **Save gas when changing gears.** If you drive a car with a manual transmission, run through the lower gears gently and quickly for minimum gasoline consumption, then build up speed in high gear. If you drive a car with an automatic transmission, apply enough gas pedal pressure to get the car rolling, then let up slightly on the pedal to ease the automatic transmission into high range as quickly as possible. More gas is consumed in the lower gears.



8. **Break gas-wasting habits.** For instance, don't pump the accelerator or race the engine when your car isn't in motion. It wastes gasoline. And use the brake pedal rather than the accelerator to hold your car in place on a hill.

6. **Avoid unnecessary use of air conditioning equipment.** When in use, it reduces fuel economy by as much as 2½ miles per gallon.

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continued

30 WAYS TO MAKE GAS GO FURTHER

IMPROVE YOUR TRIP PLANNING

9. **Join a car pool for commuting to and from work.**

10. **Plan short trips carefully.** Short trips are costly in terms of gas mileage. A vehicle started cold and driven four miles may average about 8 miles per gallon. The same vehicle warmed up and driven 15 miles may average nearly 13 miles per gallon. However, don't idle the engine to warm it (a wasteful practice). Drive slowly the first few blocks.

11. **Consolidate your driving.** Combine short shopping and commuting trips to reduce the miles traveled for each action. Patronize shops in your immediate area as much as possible to reduce mileage.

12. **Pre-Plan your trips.** Figure out which route will require the least fuel. Allow for the fact that freeway driving is nearly twice as economical as driving in heavy city traffic. Travel during off-peak traffic times whenever possible. Use routes with a minimum number of traffic lights and stop signs.

13. **Think economically.** If you have more than one car in your family make the greatest use of vehicle(s) consuming the least amount of gasoline.

MAINTENANCE AND CAR CARE

14. **Get a tune-up.** Keep your car engine tuned according to the specifications given in your owner's manual. If your manual is lost, then follow this plan: Every 10,000 miles a major tune-up should be done. That means:

- Install new spark plugs, ignition points, and condenser.
- Clean or replace the positive crankcase ventilating (PCV) valve, and remove gum or sludge from the hoses.
- Check all electrical ignition circuits and connections for voltage drop and resistance. Clean, tighten, and replace them as necessary.
- Inspect the choke for proper operation.
- Set the timing to the manufacturer's specifications.
- Check the ignition advance mechanism (mechanical and vacuum).
- Remove foreign matter from the exhaust gas recirculatory valve and hoses and check the controls following the manufacturer's specifications.
- Check the exhaust system for blockage.
- Replace air and fuel filter elements.
- Check for fuel leaks at carburetor, fuel pump, gas line and gas tank.

About 5,000 miles after the major tune-up, a minor tune-up should be performed. This may involve cleaning the plugs, and adjusting points and timing as necessary.

15. **Check tire pressure at least once a week.** For best gas mileage and for driving on long trips with heavy loads, inflate your tires 3 to 4 pounds above the recommended pressure but do not exceed the max shown on the tire wall. Underinflated tires can decrease fuel economy by as much as 1 mile per gallon.

16. **Consider buying radial tires.** Radial tires will give you from 0.5 to 1 more miles per gallon. Their initial high cost is usually paid for in fuel savings and longer tread life. Warning: Do not mix radial tires with conventional tires.

17. **Make sure your wheels are properly aligned.** An annual check is in order. Improper front wheel toe-in alignment can increase fuel use by 0.3 miles per gallon.

18. **See that your brakes are adjusted correctly.** Dragging brakes can rob gasoline economy. Be sure they are releasing properly.

19. **Don't carry unnecessary weight.** For every additional 100 pounds, gas consumption can increase as much as 0.2 miles per gallon.

20. **Don't let the gas station attendant overfill your tank.** Tell him to stop at the cut-off on the automatic valve. This will eliminate any chance of spillage.

21. **Buy gas only when the gauge**

shows a quarter tank or less. The practice of keeping tanks nearly full at all times is wasteful. Each fill-up introduces the possibility of spillage. The higher gas tank weight also adversely affects mileage.

22. **Use gasoline of the proper octane rating.** Using too low an octane rating for your car will produce a "ping" which, if sustained, will damage the engine. Using too high an octane wastes money and will not produce more power or improve fuel economy.

23. **Change oil and oil filter at recommended intervals.** Dirty oil can seriously damage engine parts and cause friction and wear that rob gas mileage. A worn engine that burns oil will require more frequent tuning and get progressively poorer gas mileage.

24. **Use a good quality multi-grade (multi-viscosity) oil that meets the appropriate API and SAE service rating.** Multi-grade 10W30 and 10W40 oils help reduce internal engine friction and give better gasoline mileage than single grade SAE 30 oils. Do not use an oil of higher viscosity than recommended in your owner's manual since heavier oils tend to increase friction and decrease miles-per-gallon efficiency. A lower viscosity oil such as 5W30 is recommended for winter months in the northern states.

BECOME AWARE OF GAS USAGE

25. **Keep a check on miles per gallon.** That's the number of miles you get from one gallon of gas. Record the amount of gasoline added to your tank at each fill-up and the odometer reading. Miles per gallon is obtained by dividing the miles traveled since the previous fill-up by the gallons added at the last fill-up.

26. **Consider installing a miles-per-gallon meter or a manifold vacuum gauge.** The gauge can teach you good driving habits by visually indicating the vacuum in the intake manifold which is directly related to gas efficiency. To increase your gas mileage, learn to drive so that you achieve a high vacuum reading on the gauge.

SELECT YOUR NEW CAR WISELY

27. **Get some expert advice.** Before starting out to buy a new car, write to Fuel Economy, Pueblo, CO 81009, for a copy of "EPA/FEA 1975 Gas Mileage Guide for New Car Buyers." Study the fuel economy figures carefully. Also review the tabular comparison of specifications and test-results published by *Consumers Union* and the motor industry magazines. Generally the best fuel economy is associated with:

Low vehicle weight
Small engine
Manual transmission
Low numerical axle ratio
Low frontal area, i.e., car width times height.

28. **Purchase only the optional equipment and accessories you really need.** Such items as automatic transmission, power steering and air conditioning require considerable energy which must be derived from the gasoline. Other equipment such as power brakes, electric motor-driven windows, seats and radio antenna require little energy for their operation. However, these items as well as a vinyl roof, and a host of other accessories all add to the vehicle weight and thus reduce fuel economy.

29. **In warm climates, select a light-colored vehicle.** Light colors reflect the sun's rays and keep the car cooler.

30. **Look into local laws that save energy.** State and local laws that help reduce automobile gasoline consumption include: increasing availability of highly energy-efficient public transportation; creating express lanes for carpools and buses during peak traffic hours; establishing a system of one-way streets in heavily used areas; synchronizing lights; permitting right turns on red; banning stopping, standing and parking on arterial streets during rush hours; and providing overpasses at busy intersections.

This information provided courtesy The Office of Energy Conservation and Environment, The Federal Energy Administration.

To obtain a free copy, write for "Tips for the Motorist," Consumer Information, Pueblo, CO 81009.

Chances are you either have personally experienced or witnessed a car, motorcycle, garage, or kitchen fire during your lifetime. Remember how it started?

You were tooling down the road, minding your own business, when smoke began billowing from under the dashboard.

Someone left cooking oil or fat near a burner on the gas range and it ignited, smoking and smelling up the entire kitchen.

You and your dad were in the garage trying to start the family car after repairing its automatic choke, when flames suddenly shot up from the carburetor.

Recall what you did? Odds are you did what most folks have been doing for decades—ran for water, grabbed an old blanket or gunny sack, or simply scooped up handfuls of dirt or sand and made like a fire fighter. Maybe you were successful. Maybe you weren't.

Odds are you didn't (and still don't) have a portable fire extinguisher handy to douse out such little fires before they become big ones.

DRIVER and the National Fire Protection Association (NFPA) both think you should have one or more fire bottles, as they're often called. To prevent

How to select a

Alone on a freeway and flames under the hood can be a sticky experience, but pretty Brenda Burdette met the challenge with a portable fire extinguisher containing five pounds of dry powder. She proved that gals can cope with such emergencies as well as the guys simply by keeping her cool and knowing in advance the location and easy operation of the vehicle's fire bottle. When smoke began seeping from the engine compartment, she carefully steered to the right shoulder of the road, turned off the car's ignition, and wisely grabbed the extinguisher **before** opening the hood to see what was burning.

you from buying the wrong type, mounting it wrong, using it incorrectly, or just plain blowing your bucks, we did some investigating that should help you to make a good choice.

We're aiming this article at people who operate or ride in cars, trucks, campers, vans, motor homes, travel trailers, motorcycles, four-wheel drives, on- and off-road racers, and powered boats.

But because these extinguishers also will put out fires in homes (especially in kitchens and garages), we suggest that you seriously consider your own vehicles and living quarters as imme-

Shopping for a fire bottle is simplified when a store displays all sizes and models of extinguishers at a handy height and mounted for easy customer viewing and handling. Topside is a variety of competitively priced, 1- to 5-pound dry chemical extinguishers. Below are boxed bottles and some do-it-yourself recharge kits ready for a buyer to take home.

FIRE EXTINGUISHER

diate prospects for good, low-cost but effective fire prevention devices.

TAKES THREE FOR A HOT TANGO

First of all, it takes three things to start a fire: oxygen, heat, and fuel. Take away any one, and you don't have a fire.

Next, because different types of fires require different kinds of extinguishing agents, fires are divided into four classes:

- Class A—Ordinary combustibles like paper, wood, cloth, rubber, many plastics, and trash.
- Class B—Flammable liquids like gasoline, paint, oil, grease, tar, and fat.
- Class C—Live electrical equipment like a motor, television set, switchboard, and wiring (when power is shut off, such a fire normally becomes Class A).
- Class D—Combustible metals like magnesium and titanium (chips, shavings, turnings, etc.).

Vehicle drivers should be concerned primarily with A, B, and C fires—with concern for Class C more or less limited to the home, garage, and shop.

AVERAGE READER CAN AFFORD ONE

Selling and servicing fire extinguishers has become a big and competitive business in the United States, and it is also growing rapidly overseas. DRIVER found that selling prices for acceptable units varied from $5.30 for a one-pound, throw-away model available at base exchanges and ships' stores to about $50 for much larger, rechargeable, more efficient cylinders. The national average selling price is about $10 per unit, well within the reach of most of our readers. This isn't really a big price to pay for the protection you are buying for yourself and your car. And it's nice to know that you might have the opportunity to lend a hand to a fellow motorist in trouble or to save a neighbor a lot of grief.

Seeing's believing! Note how the flame is sliced in two from a butane cigarette lighter when lowered gently into an invisible layer of odorless, colorless gas, Du Pont FE 1301, better known as Halon. This newly developed fire suppressant has the unique ability to interrupt the propagation of flames and to extinguish them on contact without leaving residue for after-fire cleanup. Halon is rapidly becoming popular with race car, off-road vehicle and boat owners who desire on-board fire control systems.

SELECTING AN EXTINGUISHER

Buying an extinguisher is simple if you take a little time to evaluate your needs. Every bottle is clearly marked as to the size and class of fire for which it was designed. There is no single "best" model for house, garage, car, or other domestic use, but there are some excellent extinguishers on the market.

Several extinguishing agents are used in fire extinguishers, the most familiar being water although water is good *only* against Class A fires. Water will spread a gasoline or oil fire (Class B), and because it is a conductor it should not be used against an electrical fire (Class C). In fact, the electrical source must be turned off before an electrical fire can be fought successfully.

Soda acid or "baking soda" extinguishers are water types that don't han-

continued

Be selective! Picking the right fire extinguisher is more important than the price. Above are some dry chemical extinguishers, all competitively priced but generally designed to do one fire suppression job better than another.

continued

HOW TO SELECT A FIRE EXTINGUISHER

dle easily and must be recharged yearly. A better choice would be a gas-pressurized water type. A manually operated, pump-tank type also is available. Of all the various portable water types, sizes vary from 1- to 5-gallon capacity.

Class B (flammable liquid) fires also can be doused with foam type chemical extinguishers. These combine sodium bicarbonate, aluminum sulphate, water, and a stabilizing agent to create a spray of foam through a discharge hose.

There are several dry chemical or "powder" agents designed to extinguish flames. Some in current use are: Sodium bicarbonate, mono-ammonium phosphate, potassium bicarbonate, and potassium chloride.

MULTI-PURPOSE MAY BE BEST

While "regular" dry chemical extinguishers are classified for B and C fires only, some are listed and approved for A fires, too. Generally, mono-ammonium phosphate is the base chemical in extinguishers rated for all classes. Such combination units are commonly designated "A-B-C," "multi-purpose," "tri-class," or "all-purpose."

If you plan to buy just one extinguisher for your car, garage, or home, this is the compromise type recommended by NFPA and most other fire prevention authorities. A unit with a 2- to 5-pound chemical capacity is a wise selection, although larger models also are marketed.

You should remember that because A-B-C extinguishers are less effective on Class A fires, it may be necessary to subsequently spray water on the blaze—for example, fire in car upholstery or overstuffed furniture.

Multi-purpose chemical extinguishers are rapidly becoming big sellers in both the throw-away and refillable types. By careful shopping, at least in the U.S., you should be able to buy an A-B-C disposable one-pounder for as low as $4.75, or two- and five-pounders in the rechargeable versions for about $10.25 and $18.75, respectively.

You can buy a two-pound, tri-class chemical, do-it-yourself kit to revitalize an emptied extinguisher for around $3.25. Contents of Sears, Casco, and American La France kits, for example, include a paper funnel, bag of dry chemical, a pressurized CO_2 gas cartridge, and printed instructions.

Most extinguishers, however, must be recharged by certified service companies located in many cities. Check the Yellow Pages under "Fire Extinguishers."

Prices of "regular" dry chem extinguishers for B-C fires only (there are a lot of these types on sales counters) will generally run about one-third to one-half less than A-B-C models of the same approximate capacity.

BE A SMART SHOPPER

To be a really smart shopper, you should also know that portable fire extinguishers (Classes A and B only) are rated by number for relative effectiveness at a temperature of plus 70° Fahrenheit with an amateur operating the unit.

The smallest extinguisher to carry in your vehicle should have no less than a 5-B:C rating printed on its outside label and contain no less than 2 or 2½ pounds of chemicals. All such bottles are 14 to 15½ inches in length, small enough to locate out of the way.

But what does the numeral "5" preceding B:C mean? Well, Underwriters' Laboratories (UL) says it indicates that a nonexpert can extinguish a 5-square-foot area of surface fire on type "B" material with a 5-B:C extinguisher before exhausting his powder supply.

An 18-pound dry chem unit costing about $48 and rated 10A:40BC means our average reader who buys one can expect to extinguish 10 square feet of surface in a Class A fire or 40 square feet in a "B" blaze or go up against a Class C electrical fire.

ONBOARD FIRE CONTROL SYSTEMS

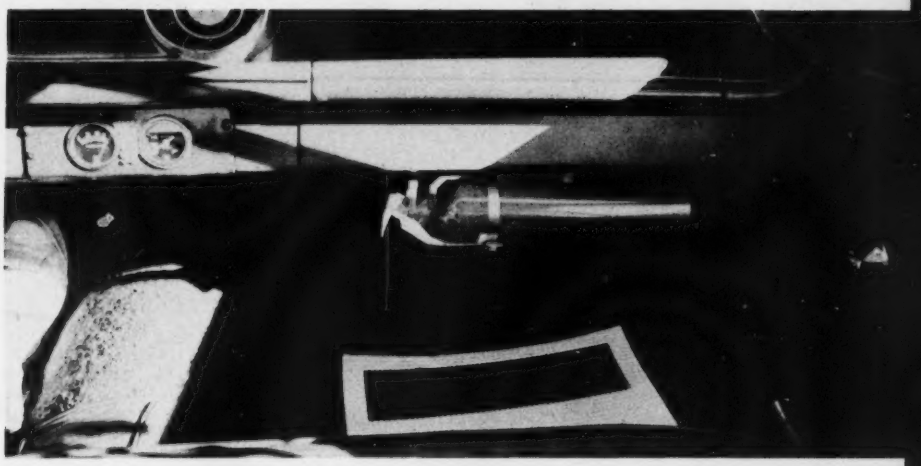
While a multi-purpose dry chemical unit may do the job in an emergency, more and more operators of racing cars, off-road vehicles, recreation vehicles, and power boats are turning to a new anti-fire agent called Halon, although it's still relatively expensive for the average homeowner and motorist. Developed by Du Pont, primarily for B and C fires, Halon is a methane gas available in two formulas—FE 1301 and FE 1211.

If you value your rig or your boat, then a built-in FE 1301 Halon system may be your bag. It actually is a fire suppressing agent—not an extinguisher. It puts out a fire by suppressing the flames and cooling the heat.

Halon has very low toxicity, is electrically non-conductive, is operable from −65° to +150°F, and is odorless and colorless until flame is introduced, then it gives off an odor (bromine). You can squirt Halon on a driver without taking away his oxygen. And perhaps best of all, it leaves no residue for costly after-fire cleanup.

In electrical fires especially, the damage from chemicals frequently costs more than the fire itself. And the mess you can make under a hood can easily cost you more than the price of a Halon system. It takes four to six times as much CO_2 to put out a fire in a given area as it does Halon, for example.

A 3½-pound, hand-held Halon extinguisher sells for about $125. An automatic system approximately doubles the



The very best place to carry a fire extinguisher in your car is mounted securely in the passenger compartment. Keeping it in the trunk is better than nothing, but remember that a rear-ender can damage the trunk lid and lock your extinguisher up where you can't get at it.

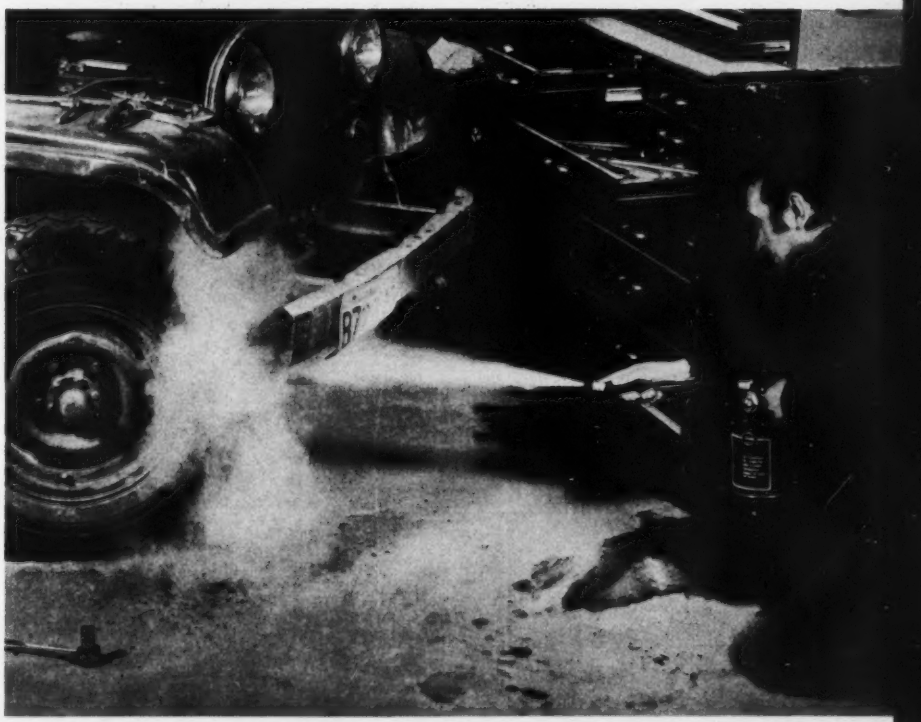
price, but installation is fairly easy and a good schematic comes with all the necessary information to do it yourself.

TIPS YOU CAN'T IGNORE

You may think you're ready to buy a fire bottle, but some practical tips are still essential:

- Make certain the label shows the extinguisher is UL or FM (Factory Mutual) tested and approved.
- If you're a boater, it must be U.S. Coast Guard approved; for a commercial vehicle, approval is by the Department of Transportation.
- "Beer can" size extinguishers are a poor choice. These are tin cans, "bombs," aerosol containers, and plastic shakers or squeeze bottles usually holding less than a pint of liquid or 12 to 16 ounces of a dry powder. They generally are of uncertain reliability and their range is usually dangerously limited.
- Learn how to use your extinguisher. Many extinguishers empty in from 8 to 12 seconds; some last up to 30 seconds. You won't have time to experiment.
- Take care of your extinguisher. If it has a gauge to register pressure, check it at least monthly. If it doesn't, follow maintenance and recharging instructions given on the unit.
- Locate your extinguisher where you can get to it quickly and without cutting yourself off from the fire and an escape route.
- Don't make a fire worse by introducing unnecessary oxygen. In other words, *if you have a car engine fire, don't open the hood to see what's burning until you have your extinguisher (or a blanket) ready.* Don't open doors or windows in a house or garage.

In any fire the very first thing to do is alert or remove others who may be endangered and sound the alarm (notify fire department). Then, if the fire is still small, fight it.



Could be you? Typical of almost any home garage scene is this shot of a guy working on his Jeep, when a ruptured fuel line spurts gasoline on a hot engine block. Bingo! You've got the makings of a domestic disaster. Our friend had a five-pound dry chemical extinguisher hanging nearby, however, and quickly saved the day (plus his vehicle and garage) by shooting a fine stream of A-B-C powder at the base of the blaze, snuffing it out with little or no damage.

The brand names mentioned or shown do not represent endorsement by DRIVER or the Air Force.

Discover America... Get Lost On A Rally

by

SSgt Daniel N. Link
92 FMS/TT
Fairchild AFB, WA

Remember the last time someone gave you directions to their house? "Follow Third Street to the Shell Station, turn right, go three blocks and . . ." Well, actually, your friend has sent you on a miniature rally. Add a few rules, a long list of instructions, precise speeds to maintain and check points along the route to make sure you do everything correctly, and you've got yourself a full-blown auto rally.

But wait just a minute. By no means should anyone think a rally is a speed event. If you want to get into an argument with a rallyist, just call a rally a race. Most self-respecting rallyists will set you straight, and fast. In fact, most clubs will disqualify you from an event for any traffic violation, especially speed. You will probably notice that people who rally with any regularity are some of the better drivers on the roads. No brag, just fact. Rallying teaches you a lot about driving.

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DISCOVER AMERICA... GET LOST ON A RALLY

Rallying lacks in popularity because it is not a spectator sport. There is no way to sit in one place and watch a rally. But most people who rally once go back again and again because it is an enjoyable, challenging, and inexpensive sport. That's right, I said *inexpensive*. There is no special vehicle preparation or excessive punishment to your automobile. A rally can be run in any vehicle from a sports car to a pick-up truck. All you really need is a clipboard, paper, pencil, a fairly accurate timepiece (a wrist watch will do), two people looking for several hours of pure enjoyment, and of course a vehicle of some sort.

Interested? Well let's drive through a typical rally. Remember . . . rallies are for fun. Pay particular attention to following the course, driving safely, and trying to maintain the assigned average speeds. All average speeds are well within the legal highway speed limits.

As you and your navigator arrive at the start (usually in a parking lot), look for the registration area. If you cannot find the registration area, ask someone to point it out. Obtain a registration form, fill it out and return it to the persons taking registration. In a well-planned rally you may be required to pass a technical inspection to make sure your car is in safe condition (lights, brakes, turn signals, seat belts, etc.).

Next, obtain "Master Time." Everyone synchronizes his watch before the rally. Somewhere in the registration area there will be a clock marked "Master Time" or "Official Time." Most clubs set their watches by WWV, the Bureau of Standards Short Wave Radio Stations.

Next, obtain a copy of the club's General Instructions. This is very important because these are the rules that will govern the rally. Read them carefully. *Do ask* any questions you may have.

A clipboard for holding the printed instructions is handy for the navigator. If a night rally, a flashlight is a must! Most rallies start in parking areas at shopping centers or public parks.

After being timed in at a checkpoint, cars receive a new "time out" to start the next leg of the rally.

Checkpoint personnel time each car to the second or even the hundredth of a minute, and it's penalty points for every second early or late. Equipment for rally cars varies. Powerful road lights are used for long night events.

Some cars are equipped with exotic computers that do all the figuring to within 1/100 of a minute. Computer-equipped cars are placed in a separate class, and the majority of cars in a rally run with only a wristwatch and a pencil.

Now you are ready. You have registered, you have master time, and you understand the rules. Look for the starter who will line the cars up in numerical order. As you approach the starting line, you will be given an out time and a set of instructions. Immediately check the instructions to make sure all the pages are there, that they are readable and in numerical order.

The starter may tell you when to leave or he may tell you to leave on your own time. Be sure to write down the time assigned to you. You're off.

ODOMETER CHECK

The first few instructions consist of an odometer section. You are given mileage reference points so that you can check your odometer against the rally master's odometer, since no two cars will read the same mileage. On your first rally there will be no need to pay close attention to this but as you learn more about rallies you will learn to use this to calculate your time-speed-distance more accurately. You will be given a specific amount of time to complete this section. Follow the instructions to the end of the odometer section. Pull over to the side of the road with the other cars at the end of this section. If your out time was 11:14 and you were given 30 minutes to complete this section you should leave this point at 11:44, so just wait until your time comes before leaving.

Leave the end of the odometer section at exactly 11:44. If the first speed given is 25 mph, accelerate to about 30 or 35 mph for about 30 seconds and then drop back to the assigned 25 mph. The speeds are *average* speeds so if you are slowed by traffic or stops you will want to make up for lost time.

Remember, though, no rally was ever won in a ditch. If you want to make up for lost time, do it safely and bear in mind that you may be disqualified for a traffic violation.

The main object is to stay on course. The rally master may set a few traps that will cause the unwary rallyist to go off course. If you should get lost, double back to a point where you *know* you were on course. Now try again—only this time pay attention.

As you arrive at the first checkpoint, pull past the checkpoint sign and you will be given information by the officials on a checkpoint slip. Read this information carefully. There might be special instructions, a new speed or you might be told to skip an instruction (an old trap). The slip will also give you another out time. Pull forward to the out marker and leave this point at the assigned time. You cannot make up for time lost on the last leg. It's like a whole new rally.

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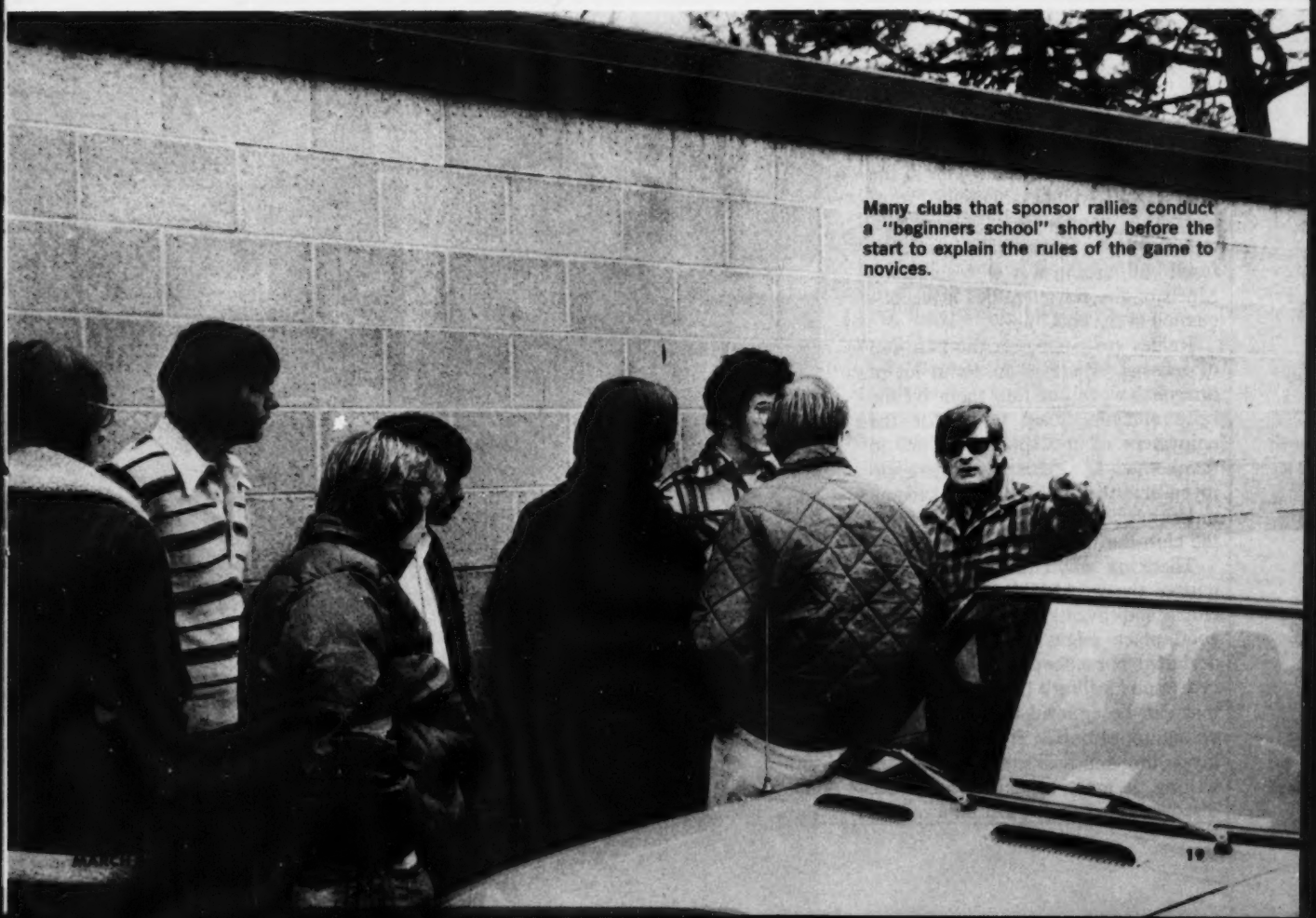
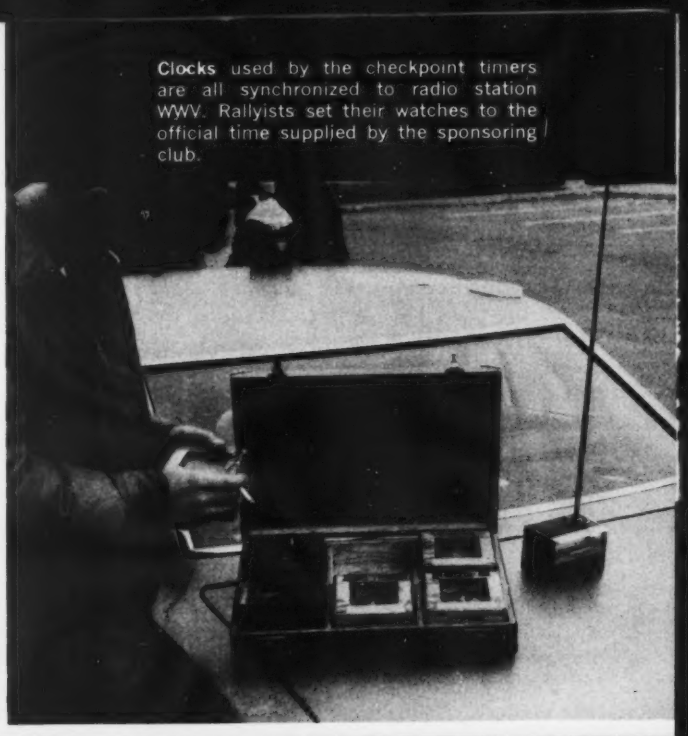


Many clubs that sponsor rallies conduct a "beginners school" shortly before the start to explain the rules of the game to novices.

When you see a checkpoint sign, you'd better be on time!



Clocks used by the checkpoint timers are all synchronized to radio station WWV. Rallyists set their watches to the official time supplied by the sponsoring club.

Most rallies require cars to pass a safety check before entering. Cars are checked for brakes, lights, tire condition, shocks, proper licensing, etc.

At the end follow all instructions regarding scorecards. If you are confused about what to do, ask someone. Now kick back, relax and join in the fun. Results will be announced after all scoring is complete. If you encountered anything in the rally that confused you, talk it over with someone. Much of the fun at rallies is the discussion at the end.

Rallies are put on for the pure fun of rallying. There is an awful lot of time and work put into them by the rally officials. They do it for the enjoyment of the sport. Be sure to thank them for the rally. If you enjoyed it and would like to become more active, inquire about joining the club that put on the event.

There are rally enthusiasts in every part of the world. Check around for clubs and events in your area. A good place might be a foreign car dealer or parts shop. There are clubs near many military bases. It's a sport that can be enjoyed by anyone from young to old. But it's like making love—it's impossible to describe in writing, it must be experienced! So, discover America-get lost on a rally.

Seat Belt Signal

The Department of Transportation has established an automobile safety belt reminder system to replace the interlock system.

The new system consists of a visual "Fasten Seat Belt" signal that will operate for four to eight seconds after the car's ignition is turned on and of an audible signal that will operate during the same time if the driver's safety belt is not in use.

Auto makers must use the new system on all cars manufactured after February 24, 1975.

Congress banned the interlock, which required front seat passengers to buckle up before the car could be started, last October after much complaint from car owners.

New Spanish Vehicle Code

Spain has revised its vehicle code and toughened up a lot of rules. A major change involves an increase in fines imposed when rules of the road on speed and safety are violated. The fines for operating vehicles in dangerous, reckless or negligent manner range from 2,000 to 15,000 pesetas.

A new Article makes the use of seat belts mandatory for the occupants of the front seat of any passenger vehicle. Failure to wear belts can result in a fine of 2,000 pesetas.

The modified Code says that vehicle operators are expected to drive in a manner that will permit them to stop before colliding with anything in front of them. In essence this means any "at-fault" accident can carry a violation and fine.

An interesting new regulation stipulates that highway patrolmen have the authority to take the driver's license away from a driver on the spot for reckless or negligent vehicle operation. These suspensions are for periods up to three months. Incidentally, you also may be fined for talking back to the patrolman or making "incorrect" gestures.

Jack Stand Failures

If you have had problems with a jack stand failing under load, the Department of Transportation would like to hear from you. The Department tested 40 models of jack stands on the market and found nine could not support the weight they claimed. Weight ratings are indicated on labels.

Two of the models that failed the tests have been recalled by their manufacturer, the Pathfinder Auto Lamp Co.

Bar Tenders TAKE HEED and Party Hosts Take Heed

The bar or host who serves the last drink to a person who then becomes involved in a drunken driving accident, may now be financially liable for claims arising from the accident. So states a California court.

A $200,000 compensation was recently awarded by the court to a three-year-old child whose parents were killed in a head-on collision with an intoxicated driver. The drunk and his wife also were killed in the crash. The judgment was made against the bar that served the driver his last drink.

In making his ruling, the judge warned that it could also apply to a private person, such as a party host, who gives drinks to a guest who is subsequently involved in a traffic accident because of alcohol.

Using Jumper Cables

In the operators' manuals Chrysler provides with its 1975 cars is a new procedure for using jumper cables. This procedure is generally accepted by all automotive experts today, to avoid potential dangers.

It includes steps not commonly observed by most of us. For example, the negative cable clamp is not attached to the negative pole in the battery of the car to be started as in the conventional method. The possibility of a spark which might cause the battery to explode is reduced if the cable is clamped to the alternator mounting bracket on the side of the engine compartment away from the battery, provided the bracket itself has a good ground contact.

A battery can rupture or explode if assist starting is attempted when the electrolyte in either the booster battery or the discharged battery is frozen or so low as to be not visible. Checking the electrolyte requires removal of the vent caps on both batteries. They should be left off and the vent wells covered with a cloth before starting is attempted. Once the car is started, the cloths should be discarded because they have been exposed to sulphuric acid.

An assist power source with an output greater than 12 volts should not be used. Battery fluid should not come in contact with the eyes, skin, or clothing. Don't lean over a battery when attaching clamps and don't allow the clamps to touch each other. Flame and sparks should be kept away from the filler holes and it is best to wear eye protection while working with batteries.

Here is the recommended procedure:

1. Turn off lights, heater, and other electrical loads.
2. Remove the vent caps from the booster and discharged batteries. Make sure the electrolyte is at proper level. If electrolyte is not visible or appears to be frozen, **do not** attempt assist starting. A battery might rupture or explode if the temperature is below the freezing point or is not filled to the proper level.
3. Lay a cloth over the vent wells of each battery.
4. Connect one end of a jumper cable to the positive terminal of the booster battery. Connect the other end to the positive terminal of the discharged battery. Be sure both cars are negative ground. A few older cars have positive grounds.
5. Connect the other cable to the negative terminal of the booster battery and then to the alternator mounting bracket of your car. Make sure you have a good ground contact on the bracket.
6. Start the engine.
7. Reverse the above sequence exactly when removing the jumper cables.

CHECK — PAINT — FIX — UP

Spring usually means spring cleaning among other things. And for most people spring cleaning includes their car. Undoubtedly more cars are washed on that first balmy afternoon than any other time all year. But even if you're not crazy about having a "clean machine," fact is your car needs a good bath after a long winter. This is especially true in snowy climates where tons of salt get dumped on the roads each winter. Lots of that salt ends up on your car, and the car will literally start rusting away if you don't wash the salt off.

Well, most people don't have to be encouraged to clean up their cars come spring. And there's probably not too much we can tell you about cleaning a car—that's one automotive subject most people are pretty well up on. But in the following information and pictures we'll try to offer some tips on "springerizing" a car and doing minor touch-up painting that you should find helpful.

CHECK OUT

Before we get into spring cleaning a car, however, we would like to emphasize that cleanup time is the perfect time to check out your car mechanically. You're going to be logging more miles now that the days are getting longer and nicer. So to help make sure those miles are fun, trouble-free, safe ones, it's a good idea to check your car as carefully for mechanical defects as you're going to be checking it for aesthetic defects. The "Checking It Out" article in last month's DRIVER is a good general guide for inspecting your car. A basic maintenance checklist is also included on page 26.

SALT

As we said before, the first thing you snow-country people need to do when warm weather arrives is completely desalt your car. Unless you're from Southern California you're probably all too familiar with what salt does to a car —like when a new car starts rusting out after two winters it's obvious something doesn't agree with it.

Unfortunately salt has the whole winter to build up in those hard to clean

continued

A high-pressure, commercial car wash-type spray is needed to flush away accumulated winter salt. Be sure to get along the rocker panels, in the wheel wells, and underneath the car.

The brand names shown do not represent endorsement by DRIVER or the Air Force. The products were selected at random to illustrate the maintenance procedures described.

A variety of special car clean-up aids are available. Most products work pretty well and save time—but plain dish detergent is hard to beat for general use.

One of the handiest commercial products is bug and tar remover. This solvent will work wonders on chrome and will remove most any type of grunge—especially along rocker panels where junk collects. Follow instructions carefully.

(right)
Many types of rubbing compounds, liquid cleaners, and waxes are available. All are pretty much the same—it's up to you whose ad you want to believe. Rubbing compound is pretty good stuff for bringing out the finish on old or oxidized paint. Before waxing, the car should be thoroughly washed and dried free of water spots of course. But instead of using the traditional chamois for drying the car, try a nice big bulky towel. It's cheaper, wrings out better, and generally does a better job.

yet vulnerable places like rocker panels, wheel wells, and underneath the body. So the only good way to get the salt all cleaned out is at a commercial car wash—the kind with the high-pressure spray guns where you drop a quarter in every five minutes. Be sure to pick a place that has lots of hot, soapy water and plenty of water pressure—you'll need all three to get rid of the salt.

The spray guns are usually sufficient to put the kabosh on salt and grime. But some good old-fashioned scrubbing with a thick sponge and hot, soapy water doesn't hurt—especially on the lower body panels where it's difficult to direct the water spray. Just be careful of the jagged edges of sheet metal along the lower panels—they can cause nasty cuts. After you get the salt and most of the grunge off at the car wash, you can head home to finish the job with the good old (less expensive) garden-hose-and-sponge method.

CLEANING AIDS

Even though most people are relative experts at cleaning a car, a lot of people overlook the car cleaning aids that are available. If you check out the

A new product on the market works wonders on weathered rubber, plastic, vinyl, or just about anything. Regular use keeps weather stripping looking better and lasting longer. Pic shows results of use on a weather-checked tire.

(right)
Steel wool and a bit of hand cleaner or a soap-filled scouring pad are still the best bet for cleaning whitewalls.

shelves in the auto department of the local discount store you'll find about as many clean-up products as there are performance additives. The big difference is that most of the cleaning products work pretty well. Products like bug and tar remover, chrome cleaners and polishes, rubbing compounds, and special waxes can have your car looking sharper in less time with a lot less hassle. But with any of these products, especially any type cleaning solvent, be sure to follow instructions carefully.

Touch-up painting is an important job that most people either neglect or blow. But there's no reason to do either. You shouldn't neglect touching in chipped paint because 1) dinged paint looks bad, 2) even a small chip can give rust a toehold, and 3) touch-up painting is a very simple job when done the simple way.

The big mistake most people make is that when they decide to do a bit of touching up they hustle down to the local parts house and grab a can of touch-up spray paint. The problem with the spray method is that you have to sand and prepare the entire area where you're touching up. And unless you really know what you're doing, your car will come out looking worse than when you started—believe me I know.

So the only way to go is with the dab method—the dab method is just as it sounds; you merely dab paint directly into the chipped area. The only problem with the dab method is that you have to have the paint to match your car in liquid form. On newer cars you can probably get a small touch-up device from the dealer or a parts house that's basically just like a felt marker. In any case paint shouldn't be that hard to come by, although you may have to buy a larger quantity than you really need. Also, anytime you have a car painted ask the shop for some paint you can keep for touch-up purposes.

If you've got your paint, all you need is a small paint brush—artist type, like used for oil or water color painting—and some special wax and grease remover, available at any paint or auto shop. To prepare the chipped area for painting, wash it with soapy water. Dish soap is fine but do not use strong detergent. Rinse thoroughly. Then use the grease and wax remover to get rid of any gunk and wax that's down in the chip—the paint won't take if there's any

continued

"Spray and vacuum" home carpet cleaning products also work great for auto carpeting —also on badly soiled cloth upholstery.

All interiors can be cleaned with warm water and a mild soap solution. Special silicone upholstery cleaners also work well and give a nice sheen. For especially dirty leather upholstery (real or imitation) use saddle soap. Dust-and-wax-type spray furniture polishes are great for cleaning up dashes and can also be used on vinyl interiors.

wax present. You may have to use a toothbrush or other appropriate tool to get down into the chip.

After the area dries you're set. Just carefully dab the paint into the chip with the paint brush—that's all there is to it. On a large ding you'll have to kind of brush the paint in and let it build up until you've covered the area. After the paint dries you can rub it down with rubbing compound so it conforms with the car finish, then throw on a coat of wax. Remember that the new paint may not quite match because the original paint on the car fades. Also, metallics are impossible to match, so don't expect too much.

The basic steps for touch-up painting are outlined in the photographs shown below.

BASIC STEPS FOR TOUCH-UP PAINTING

1.

(above, right)
Wash entire area with soapy water. Do not use harsh detergents. Rinse thoroughly.

2.

Clean chipped-out area with grease and wax remover (available at paint and auto supply houses). New paint will not take if any wax is present. A toothbrush may be needed to get down into chip.

3.

Carefully dab paint into chip with paint brush. After paint dries, rub out area with rubbing compound so the new paint conforms with the car finish. Wax. Remember that the new paint may not match exactly because the paint on the car may have faded. Metallic paints rarely if ever match.

SPRING MAINTENANCE CHECKLIST

Tires—Change or replace as necessary.

Tread depth—Tread wear indicators not visible.

Tread wear — Uneven wear — wheel alignment or balance problem.

Lights — Operate properly, including turn signals.

Engine—Tuned, air and gas filters replaced as necessary, oil and filter changed, emission system checked and serviced.

Wipers—Do not streak or stick to windshield. Windshield washer filled and operating.

Cooling System — System properly filled. Radiator and heater hoses in good condition and properly clamped. Thermostat operating properly.

Battery — Clean, dry, correct water level, connections tight and clean.

Drive Belts—Good condition and properly tensioned. Spare fan/alternator belt in car.

Brakes—Master cylinder topped off—hydraulic system checked. Brakes operating properly. Recent inspection?

Automatic transmission — Shifting properly? Fluid proper color and level.

Transmission Differential — Correct fluid level.

Exhaust System—Sound, no leaks.

Shocks, wheel bearings, front end—Car rides, handles, and steers properly. Bearings serviced.

LETTERS TO THE EDITOR

BACKFIRE

FOG LIGHTS, SNOW TIRES

The men and I at my small detachment often get into arguments concerning the safety of fog lights. We can buy the yellow fog lights downtown (which everyone says are the best) or we can buy the clear fog lights (which everyone says are also the best). From an expert point of view, which would you consider to be the safer of the two types? We often have to drive in very heavy fog.

Also, due to the fact that we are located on a small mountain top, we are wondering just how safe it is to mix conventional bias-ply snow tires with radials (snow tires in the rear). I have heard pros and cons on this subject. So far, I have sold my snow tires and put chains on my radials. Is that wise?

Sgt Richard D. Abel
Det 27, 2187 CG
APO New York 09240

A fog lamp is determined by its beam pattern and not by the color of its lens. A fog beam is symmetrical, wide angle (to provide good definition of roadside markers), and flat. Clear lenses pass up to 15% more light and are recommended for maximum performance. Amber lenses, however, are most effective for glare reduction and depth perception.

Yes, you were right to get rid of your old snow tires and not mix them with the radials. Radials are built in such a way that when they are turned they immediately assume the new direction. If the snow tires on the rear aren't radials, the risk of slipping and skidding is much increased. And we believe in chains—they offer the greatest increase in traction over the widest variety of winter road conditions.

OPEN THE DOOR!

I thoroughly enjoy reading DRIVER. It is full of valuable tips. I do have to take issue, however, with a statement in "Shape Up, It's Winter!" in the December issue.

Under no circumstances should one warm up his car engine in the garage with the doors closed. This can be not only dangerous but fatal, as witness the recent tragic death of Don Wilson and his young son as a result of the car engine running in an enclosed area.

Paul F. Ruth
Navy Fleet Material Support Office
Mechanicsburg, PA 17055

You're right, of course. We said, "Be especially careful when warming up the car in the garage with the doors closed." We should have said, "Don't!"

PLUS FOR QUALITY CARS

2d Lt Daniel R. Wysocki's comments in the December issue struck a responsive chord, especially when he said, "Make the cars safe to drive before we make them safe to wreck."

As he points out, performance can be a pro-safety factor. A state policeman friend of mine says speed doesn't kill—it's the sudden changes of speed or direction that are fatal.

That might sound like "you're killed by the sudden stop, not the long fall," but it isn't. Speed in a car is controllable, if the car performs properly and the driver is trained.

Let's push for cars with quality built in and performance that's controllable, then push for a requirement for completion of a meaningful defensive driving course annually as a condition of driver licensing.

Zane R. Miskin
Chief, Advertising & Information
USA District Recruiting Command
Lansing, MI 48933

BICYCLES

Regarding the December "Pet Peeve," BT3 Buesking indicates that a bicycle has the same rights as other vehicles. In my opinion, they have the same rights as pedestrians—meaning that they are to be watched out for. But the bicycle rider should have enough courtesy to seek ways to avoid automobiles and motorcycles. I have frequently seen cases where traffic was slowed almost to a stop for a block because some clown didn't have any respect for the traffic behind him. The operational speed also puts the bicyclist in the pedestrian class.

Bike riders pay no road taxes. I drive a car and a motorcycle and I also have a 10-speed bike. I am a believer in defensive driving and feel that a person should realize the capabilities of the vehicle he is driving and respect all other vehicles and pedestrians. Part of this respect is realizing there are other people on the road who may or may not be in a hurry but who strongly resent a bike rider who holds them up.

When I'm on the road, I stay out of the other guy's way and I appreciate it when he stays out of mine.

SSgt Bernard W. Cruse III
156th Wea Flt
145th TAC Airlift Group, NCANG
Charlotte, NC

Most state vehicle codes give a bicyclist all the rights and responsibilities of the automobile driver. That means signaling, obeying traffic signs, riding with traffic. Drivers of motor vehicles must treat the bicyclist as they would another motor vehicle. On the other hand, bicycles must be ridden as near the right side of the street as possible, which should keep them from holding up traffic. Sgt Cruse gets to the real heart of the matter when he says "respect the other guy."

Address your letters to:
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Speaking of

2.

Not too often do you see a photo of a motorcyclist in the act of tangling with another vehicle. If the photographer had used a motordrive camera we might have seen some even more spectacular aerobatics. But this photo is enough to show that the best defense a motorcyclist has is to avoid collision at all costs.

The photo, by the way, shows part of a sequence in the filming of an Air Force motorcycle safety film. The airborne rider performing the pirouette is a skilled professional stuntman, so don't try to recreate this scene yourself.

Pictures

1.

One of the real skills of a professional stuntman is knowing how to fall without hurting himself. Most street riders wouldn't get up and walk away from a spill like this one.

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Miss DRIVER

CINDY DARLEEN

"Always adjust the mirror before entering traffic. Your eyes should be focused on the rearview mirror every few seconds as part of your continual observation of the situation around you. If the inside mirror tends to jiggle down, tighten the screw behind it. And if the mirror vibrates, be alert to the possibility of worn wheel bearings, bad universal joints, or unbalanced wheels, tires or drive shaft."